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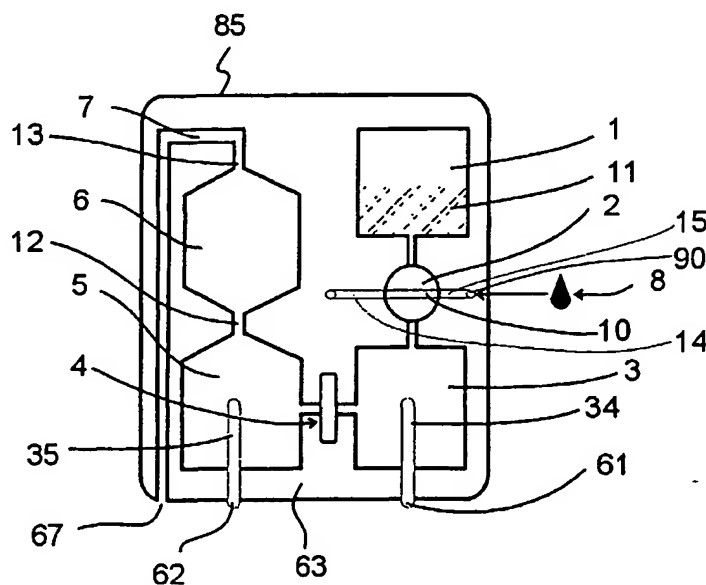
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(54) Title: A DISPOSABLE CARTRIDGE FOR CHARACTERIZING PARTICLES SUSPENDED IN A LIQUID



(57) Abstract: The present invention relates to a particle characterization apparatus in which particles suspended in a liquid passes through an orifice or aperture for detection and characterization of the particles utilising impedance determination. In particular the invention relates to utilisation of a membrane of a polymer as a base material for precision machining of a sub-millimetre orifice. Forming the orifice in a polymer membrane facilitates the construction of a single use cartridge for haematology analysis due to low material and production costs.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 835 457 A (DELATOUR LEGAL REPRESENTATIVE ET AL) 30 May 1989 (1989-05-30) column 2, line 36 - line 43	1-3
A	---	4-12
X	US 4 521 729 A (ROGGENKAMP HANS-GUNTHER ET AL) 4 June 1985 (1985-06-04) column 3, line 40 - line 43 abstract	1-3
A	---	4-12
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☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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PCT/DK 03/00384

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 232 769 A (FISHER TIMOTHY CHARLES ; FISHER DR TIMOTHY CHARLES (US)) 19 December 1990 (1990-12-19) page 7, line 12 - line 25 page 8, line 8 - line 10 page 9, line 23 - line 27 page 10, line 1 - line 7 ---	1-12
X	US 6 230 896 B1 (LAMBERT DONALD L) 15 May 2001 (2001-05-15) column 2, line 60 - line 63 ---	13
A	---	1-12, 14-21
X	GR 1 002 424 B (KAVVADIAS CHARILAOS) 30 August 1996 (1996-08-30) abstract ---	14-21
A	WO 00 07254 A (NAT POWER PLC ; CLARK DUNCAN GUY (GB); MITCHELL THOMAS ANDERSON (GB)) 10 February 2000 (2000-02-10) the whole document -----	1-21

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/DK 03/00384

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4835457	A	30-05-1989	FR 2569477 A1 DE 3529792 A1 GB 2163555 A ,B	28-02-1986 27-02-1986 26-02-1986
US 4521729	A	04-06-1985	DE 3215719 A1 AT 24054 T DE 3368127 D1 DK 186583 A EP 0092775 A1 ES 8402424 A1 FI 831414 A JP 59015849 A NO 831488 A PT 76613 A ,B	03-11-1983 15-12-1986 15-01-1987 29-10-1983 02-11-1983 16-04-1984 29-10-1983 26-01-1984 31-10-1983 01-05-1983
GB 2232769	A	19-12-1990	NONE	
US 6230896	B1	15-05-2001	NONE	
GR 1002424	B	30-08-1996	NONE	
WO 0007254	A	10-02-2000	AT 234513 T AU 757498 B2 AU 5052499 A BG 105279 A BR 9912445 A CA 2338208 A1 CN 1316110 T CZ 20010201 A3 DE 69905908 D1 DE 69905908 T2 DK 1105930 T3 EP 1105930 A1 WO 0007254 A1 GB 2340064 A ,B HU 0102999 A2 JP 2002521250 T NO 20010455 A NZ 509677 A PL 345690 A1 PT 1105930 T SK 1332001 A3 TW 461136 B ZA 200100450 A	15-03-2003 20-02-2003 21-02-2000 31-10-2001 17-04-2001 10-02-2000 03-10-2001 17-10-2001 17-04-2003 04-12-2003 14-07-2003 13-06-2001 10-02-2000 16-02-2000 28-12-2001 16-07-2002 19-03-2001 31-10-2003 02-01-2002 31-07-2003 10-07-2001 21-10-2001 16-01-2002